

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently amended): A hyperbranched polyester comprising ethylenically unsaturated groups, obtained by ~~reacting~~ a method, comprising:

(c) reacting at least one compound having at least one ethylenic double bond with at least one hyperbranched polyester to obtain the hyperbranched polyester comprising ethylenically unsaturated groups, wherein

the at least one compound having at least one ethylenic double bond is bonded to the hyperbranched polyester, and

the hyperbranched polyester is obtained by condensing;

(a) at least one dicarboxylic acid or derivative thereof with at least one at least trifunctional alcohol; or

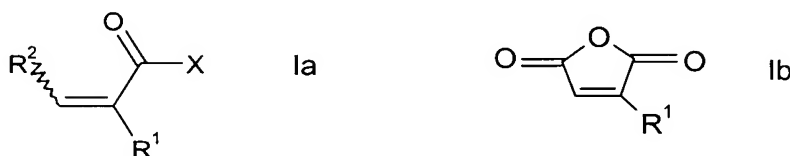
(b) at least one tricarboxylic or higher polycarboxylic acid or derivative thereof with at least one diol,

wherein

a molar ratio of hydroxyl groups of the at least one at least trifunctional alcohol or at least one diol to carboxyl groups of the at least one dicarboxylic acid or at least one tricarboxylic or higher polycarboxylic acid, respectively, is from 1.5/1 to 1/1.5.

Claim 2 (Previously presented): The hyperbranched polyester comprising unsaturated groups as claimed in claim 1, wherein the at least one compound having at least one ethylenic double bond is a compound having a terminal double bond.

Claim 3 (Previously presented): The hyperbranched polyester comprising unsaturated groups as claimed in claim 1, wherein the at least one compound having at least one ethylenic double bond is a compound of the formula Ia or Ib



wherein:

R¹ is selected from the group consisting of C₁-C₁₀ alkyl, unbranched or branched, and hydrogen;

R² is selected from the group consisting of C₁-C₁₀ alkyl, unbranched or branched, C₂-C₆ alkenyl, COOH, and hydrogen;

X is selected from halogen and OR³; and

R³ is selected from the group consisting of C₁-C₁₀ alkyl, unbranched or branched, C₁-C₁₀ alkyl, unbranched or branched, with at least one functional group, polyethylene glycol derivatives, polypropylene glycol derivatives, glycidyl, H-CO (formyl), unbranched or branched C₁-C₁₀ alkyl-CO, and C₆-C₁₀ aryl-CO.

Claim 4 (Previously presented): The hyperbranched polyester comprising unsaturated groups as claimed in claim 1, wherein the at least one compound having at least one ethylenic double bond is selected from the group consisting of:

unsaturated carboxylic acids having 3 to 30 carbon atoms and from 1 to 5 C-C double bonds;

unsaturated alcohols having 3 to 40 carbon atoms and from 1 to 5 C-C double bonds;

unsaturated amines having 3 to 20 carbon atoms and from 1 to 5 C-C double bonds;
diol and polyol ethers in which at least one hydroxyl group is etherified with an unsaturated alcohol and at least one hydroxyl group is unetherified;
diol and polyol esters in which at least one hydroxyl group is esterified with an unsaturated acid and at least one hydroxyl group is unesterified;
vinyl esters, diene and triene monoepoxides;
unsaturated halides having 2 to 20 carbon atoms and from 1 to 5 C-C double bonds,
isocyanato (meth)acrylates; and
unsaturated halogenated silanes.

Claim 5 (Currently amended): A process for preparing [[a]] the hyperbranched polyester comprising unsaturated groups as claimed in claim 1, which comprises synthesizing at least one hyperbranched polyester by condensing:

- a) at least one dicarboxylic acid or derivative thereof with at least one at least trifunctional alcohol; or
- b) at least one tricarboxylic or higher polycarboxylic acid or derivative thereof with at least one diol;

and then reacting the synthesis product with (c) at least one compound having at least one ethylenically unsaturated double bond,

wherein

a molar ratio of hydroxyl groups of the at least one at least trifunctional alcohol or at least one diol to carboxyl groups of the at least one dicarboxylic acid or at least one tricarboxylic or higher polycarboxylic acid, respectively, is from 1.5/1 to 1/1.5.

Claim 6 (Currently amended): A process for preparing ~~[[a]]~~ the hyperbranched polyester comprising an unsaturated group as claimed in claim 1, which comprises synthesizing at least one hyperbranched polyester by condensing:

- a) at least one dicarboxylic acid or derivative thereof with at least one at least trifunctional alcohol; or
- b) at least one tricarboxylic or higher polycarboxylic acid or derivative thereof with at least one diol;

in the presence of (c) at least one compound having at least one ethylenically unsaturated double bond,

wherein

a molar ratio of hydroxyl groups of the at least one at least trifunctional alcohol or at least one diol to carboxyl groups of the at least one dicarboxylic acid or at least one tricarboxylic or higher polycarboxylic acid, respectively, is from 1.5/1 to 1/1.5.

Claim 7 (Previously presented): A binder comprising a hyperbranched polyester comprising unsaturated groups as claimed in claim 1.

Claim 8 (Currently amended): A process for preparing a radiation-curable composition, comprising:

using one or more hyperbranched polyesters comprising unsaturated groups as claimed in claim 1.

Claim 9 (Previously presented): A radiation-curable composition comprising one or more hyperbranched polyesters comprising unsaturated groups as claimed in claim 1.

Claim 10 (Previously presented): The hyperbranched polyester comprising ethylenically unsaturated groups according to claim 1, wherein the at least one dicarboxylic acid or derivative thereof is selected from the group consisting of succinic acid, glutaric acid, adipic acid, phthalic acid, isophthalic acid, terephthalic acid, monomethyl esters thereof, dimethyl esters thereof and mixture thereof.

Claim 11 (Previously presented): The hyperbranched polyester comprising ethylenically unsaturated groups according to claim 1, wherein the at least one at least trifunctional alcohol is selected from the group consisting of glycerol, triglycerol, trimethylolpropane, trimethylolethane and pentaerythritol.

Claim 12 (Previously presented): The hyperbranched polyester comprising ethylenically unsaturated groups according to claim 1, wherein the at least one tricarboxylic acid or derivative thereof is selected from the group consisting of 1,2,4-benzenetricarboxylic acid, 1,3,5-benzenetricarboxylic acid, 1,2,4,5-benzenetetracarboxylic acid, mellitic acid and derivatives thereof selected from the group consisting of corresponding anhydrides in monomeric or polymeric form and monoalkyl, dialkyl or trialkyl esters.

Claim 13 (Previously presented): The hyperbranched polyester comprising ethylenically unsaturated groups according to claim 1, wherein the at least one diol is selected from the group consisting of ethylene glycol, propane-1,2-diol, propane-1,3-diol, butane-1,4-diol, hexane-1,6-diol, diethylene glycol, triethylene glycol, dipropylene glycol, and tripropylene glycol.

Claim 14 (Previously presented): The hyperbranched polyester comprising ethylenically unsaturated groups according to claim 1, wherein a polydispersity is from 1.05 to 50.

Claim 15 (Previously presented): The hyperbranched polyester comprising ethylenically unsaturated groups according to claim 1, wherein the at least one dicarboxylic acid is adipic acid and the at least one at least trifunctional alcohol is glycerol.

Claim 16 (Previously presented): The hyperbranched polyester comprising ethylenically unsaturated groups according to claim 1, wherein the at least one dicarboxylic acid is adipic acid and the at least one at least trifunctional alcohol is trimethylolpropane.

Claim 17 (Previously presented): The hyperbranched polyester comprising ethylenically unsaturated groups according to claim 1, wherein the at least one dicarboxylic acid is adipic acid and the at least one at least trifunctional alcohol is an ethoxylated trimethylolpropane having a formula of $\text{CH}_3\text{CH}_2\text{C}[\text{CH}_2(\text{OCH}_2\text{CH}_2)_5\text{OH}]_3$.